

Electricity + fish migration: How it works

The HYDROCONNECT hydropower screw with double rotating cylinders is based on the Archimedean principle, the operating principle of a hydropower screw. There is an outer sheath with a headrace screw that contains an inner, counter-rotating, spiral fish transport screw, which pumps water into the headwater. Power generation is made possible by a drum (rotating cylinder) with a casing pipe that is seamlessly welded to the screw blades. The system is mounted on the outer shell by roller bearings, through which high heads are possible.

The flow of water from the exiting headrace and the central luring current are used to guide fish wanting to reach the upper level to the inner fish lift. As soon as they swim into the entrance, which reaches down as far as the river bed, they are transported gently upwards in the screw chamber in the constantly filling water. Afterwards, the fish end up in the headwater via a fish discharge chute. The water transported to this upper level is ready once again for reuse by the plant or alternatively for the fish to make their way down.

Fish discharge chute

- chute to transport the individually ascended fish into the calm headwater
- minimum slope
- can be disassembled

Steel construction

- welded steel construction
- screw blades welded throughout
- high stability
- long service life
- gap-free
- large-scale corrosion protection

Intake gate

- steel protection for blocking the inlet or alternatively to regulate the water quantity
- self-closing in the event of a power outage

Seals

- rubber seal in the headwater (underwater) area
- long service life
- easy to replace
- adjustable

Substructure

possible as a concrete structure or steel frame

Control system

- speed and displacement controllable by means of a level sensor or manual input
- can be configured as an independent system

Generator works

- Generator
- Gearbox
- Brake

By varying the operating speed, the supply can be adjusted to the water flow. This variation possibility is realised through the implemented frequency converter technology.

With a planned shutdown, the hydropower screw can be actively driven in order to empty it (protection against icing).

Spring-loaded brakes are used for braking, which are triggered by electromagnets. The brake is applied automatically in the event of a power outage.

Cover/housing

Built to be waterproof on request including design variations (wood, glass, stone, concrete, etc.)

Roller bearing

As part of the main bearing the radial forces get absorbed by heavy-duty rollers.

- no underwater storage required
- big fall heights possible

Walk-on maintenance gangway

for maintenance and cleaning of the system

Fish ascent & descent (patented double screw)

The fish transport is based on Archimedes' principle: Fish are raised effortlessly upstream or alternatively downstream in the standing water of the inner or alternatively outer screw chamber.

- special shape of the screw blades to create an optimised guiding current
- bottom connection for fish that are weak swimmers such as the bullhead, for example

Hydraulic lifting frame

makes it possible to offload the rotating cylinder during maintenance and to replace the rollers.



You can find function videos at
www.hydroconnect.at/en/videos